

REMARKS

Applicants cancel claim 2 and amend claims 1, 3-6, 12, 13, 21, 22, 24-26, and 29 such that claims 1 and 3-29 are pending in this application. Applicants respectfully request allowance of all the pending claims.

Claim Rejections – 35 U.S.C. §102

The Examiner rejects claims 1, 3, 4, 12, 14-21, 25, 27, and 28 under 35 U.S.C. §102(b) as being anticipated by United States Patent No. 5,279,360 (“Hughes”).

Claims 1, 5, 12, 21, and 25 each recite a condenser assembly or method for condensing a refrigerant for use in a retail store refrigeration system and for rejecting heat of the refrigerant to ambient air of the environment. The condenser assembly includes, among other things, first and second condenser assemblies. Each of the assemblies includes at least one standard-sized microchannel condenser coil and an air moving device associated with the microchannel condenser coil and operable to move air through the microchannel condenser coil.

The present invention is advantageous because the amount of airflow through the microchannel condenser coil(s) of each modular condenser assembly can be controlled independent of the number of modular condenser assemblies mounted together to meet a required capacity. More specifically, each modular condenser assembly can be designed and pre-built to optimize the velocity of air through the microchannel condenser coil(s) of each modular unit. This velocity is referred to as “face velocity”. The optimal face velocity will not vary regardless of the number of modular units coupled together to meet the heat rejection capacity required by the refrigeration system.

Hughes discloses a V-shaped evaporator/condenser coil used in a ducted air system of a refrigeration or heat pump system. The tubes of the coil are formed of extruded aluminum and include plural internal webs dividing each tube into plural flow passages of relatively small hydraulic diameter of .070 inches or less. Hughes also discloses stacking the coils into a nested configuration such that the tubes of adjacent coils are either aligned (Fig. 12) or staggered (Fig. 11).

Hughes does not teach or suggest a condenser assembly including first and second condenser assemblies, where each of the assemblies includes at least one standard-sized microchannel condenser coil and an air moving device associated with the microchannel condenser coil and operable to move air through the microchannel condenser coil. Rather, Hughes discloses a

modular unit having only a single V-shaped coil. The modular units of Hughes do not include dedicated air moving devices of any type and therefore the face velocity of the air through the coils cannot be controlled when the modular units are nested together. Instead, the face velocity will be reduced with each additional modular unit added to the system.

In addition, there is no motivation to add a dedicated air moving device to the modular units of Hughes because the addition of an air moving device would prevent the V-shaped coils from being nested together. In other words, the addition of a dedicated fan to each modular unit would be contrary to the teaching of the Hughes reference because it would prevent the described benefit of nesting.

Therefore, Hughes does not teach or suggest the subject matter defined by independent claims 1, 5, 12, 21, and 25. Accordingly, independent claims 1, 5, 12, 21, and 25 are allowable. Claims 3-4, claims 14-20, and claims 27-28 depend from allowable independent claims 1, 12, and 25, respectively, and are allowable for the same and other reasons.

Claim Rejections – 35 U.S.C. §103(a)

The Examiner rejects claims 2, 5-11, 13, 22-24, 26, and 29 under 35 U.S.C. §103(a) as being unpatentable over Hughes in view of United States Patent No. 5,121,613 (“Cox”).

Claim 5 recites a condenser assembly adapted to condense a refrigerant for use in a retail store refrigeration system and to reject heat of the refrigerant to ambient air of the environment. The condenser assembly includes first and second condenser assemblies. Each condenser assembly includes a standard-sized microchannel condenser coil and an air moving device. The microchannel condenser coil of the second assembly is configured such that the refrigerant makes at least one pass therethrough after making at least one pass through the microchannel condenser coil of the first assembly. Each condenser assembly includes an air moving device that is associated with its respective microchannel condenser coil and that is operable to move air through its respective microchannel condenser coil. A frame supports the microchannel condenser coils of the first and second assemblies.

Similar to the arguments presented above, Hughes does not teach or suggest a condenser assembly including first and second condenser assemblies, where each of the assemblies includes at least one standard-sized microchannel condenser coil and an air moving device associated with the microchannel condenser coil and operable to move air through the microchannel condenser coil.

Rather, Hughes discloses a modular unit having only a single V-shaped coil. The modular units of Hughes do not include dedicated air moving devices of any type and therefore the face velocity of the air through the coils cannot be controlled when the modular units are nested together. Instead, the face velocity will be reduced with each additional modular unit added to the system.

In addition, there is no motivation to add a dedicated air moving device to the modular units of Hughes because the addition of an air moving device would prevent the V-shaped coils from being nested together. In other words, the addition of a dedicated fan to each modular unit would be contrary to the teaching of the Hughes reference because it would prevent the described benefit of nesting.

Cox does not cure the deficiencies of Hughes. Cox discloses a modular refrigeration coil assembly for use in an enclosed ducted air system having a single blower. Cox discloses that by connecting a series of identically sized flat refrigerant coil modules, air cooling or heating refrigerant coil assemblies of different nominal air conditioning tonnages can be created. The modular coils are connected and arranged in an accordion pleated orientation providing a coil assembly with a substantially increased coil face area. For a given flow rate across the coil assembly, the increased face area reduces the coil face velocity of the air acting on the coil assembly to a magnitude considerably below a minimum design velocity normally associated with the coils (see spec. col. 2, line 59-col. 3, line 3).

Cox does not teach or suggest a condenser assembly including first and second condenser assemblies, where each of the assemblies includes at least one standard-sized microchannel condenser coil and an air moving device associated with the microchannel condenser coil and operable to move air through the microchannel condenser coil. Rather, Cox discloses a single blower (18) used regardless of the number of modular coils connected together. The modular units of Cox do not include dedicated air moving devices of any type and therefore the face velocity of the air through the coils decreases with additional modular coils.

In addition, there is no motivation to add dedicated air moving devices to the modular units of Cox because the addition of an air moving device would crowd the limited space within the ducted air system housing (20) of Cox. In addition, Cox discloses modifications made to the modular coils to operate efficiently at the reduced face velocity.

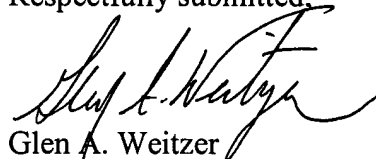
For these reasons, Hughes and Cox, alone or in combination, do not teach or suggest all of the claim limitations of claim 5. Therefore, Applicants respectfully submit that the Examiner

has failed to present a *prima facie* case of obviousness of claim 5 based upon the prior art as required by 35 U.S.C. §103. Accordingly, claim 5 is allowable. Claims 6-11 depend from allowable independent claim 5 and are therefore allowable for these and other reasons.

Claim 2, claim 13, claims 22-24, and claims 26 and 29 depend from claims 1, 12, 21, and 25, respectively, and are allowable for the reasons identified above and other reasons.

The Examiner is invited to contact the undersigned attorney should the Examiner determine that such action would facilitate the prosecution and allowance of the present application.

Respectfully submitted,



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